**Thrills & Chills**

Chapter 3

Activity 8  
Vectors & Scalars

Goals…

* Describe instances in which two carts will have the same speed but require different times to reach those speeds
* Recognize that forces are vectors and energies are scalars
* Explain how forces and energy considerations provide different insights into roller coaster rides.
* Choose whether energy or force considerations are more appropriate for analyzing aspects of roller coaster rides

For You To Read Key Points To Learn

* VECTOR = number and direction: 30 m/s to the North
* SCALAR = number and NO direction: 15 km
* Click here to enter text. l energy (GPE+ KE) is the Click here to enter text. at every point
* Click here to enter text. depends only on the Click here to enter text.- (GPE = mgh) since the mass and the gravitational force remain the same
* If 2 points on a roller coaster have theClick here to enter text., the roller coaster is moving at the Click here to enter text. at those 2 points
* On a Click here to enter text. incline g-force and normal force remain in a fixed direction = Click here to enter text.- in magnitude and direction
* On aClick here to enter text., normal force changes direction = changing acceleration in magnitude and direction = Click here to enter text.
* Speed is the same on the 2 inclines

What did you learn?

* + Energies (GPE, KE) add with simple arithmetic
  + Use Click here to enter text. to determine how fast the roller coaster is going at each point
  + Use F = ma when considering force